Claims

1. Anticorrosion coating composition of metallic parts based on particulate metal in aqueous dispersion comprising, in the following proportions (percentages by mass):

- an organic titanate and/or zirconate : 0.3 to 24%;
- a particulate metal or a mixture of particulate metals : 10 to 40%;
- a silane-based binder : 1 to 25%;
- water : q.s.p. 100%;

with the condition that the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

2. Composition according to Claim 1, characterized in that the organic titanate is chosen from the group constituted by the titanates compatible in organic phase and the titanates compatible in aqueous phase and the organic zirconate is chosen from the group constituted by the zirconates compatible in organic phase and the zirconates compatible in aqueous phase.

3. Composition according to Claim 2, characterized in that the titanates compatible in organic phase are C_1-C_8 tetraalkyl titanates, advantageously chosen from the group comprising tetraethyl titanate, tetra-n-butyl titanate and octylene glycol titanate, and the zirconates compatible in organic phase are C_1-C_8 tetraalkyl zirconates, advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.

4. Composition according to Claim 2, characterized in that the titanates compatible in aqueous phase are chelated organic titanates, advantageously chosen from the group constituted by triethanolamine titanates, and the

zirconates compatible in aqueous phase are chelated organic zirconates, advantageously the triethanolamine zirconates.

5. Composition according to any one of the preceding claims, characterized in that the particulate metal is chosen from zinc and aluminium, as well as their alloys and their mixtures or their alloys with manganese, magnesium, tin or Galfan.

6. Composition according to any one of the preceding claims, characterized in that the silane-based binder comprises a silane carrying at least one hydrolysable function in hydroxyl function chosen from a C_1-C_4 alkoxy radical.

7. Composition according to any one of the preceding claims, characterized in that the silane additionally carries an epoxy function.

8. Composition according to Claim 7, characterized in that the silane is chosen from di- or trimethoxysilane with an epoxy function or di- or triethoxysilane with an epoxy function, as well as their mixtures, in particular gamma-glycidoxypropyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

9. Composition according to any one of the preceding claims, characterized in that it additionally comprises 1 to 30% by weight of organic solvent or of a mixture of organic solvents, with respect to the total weight of the composition.

10. Composition according to Claim 9, characterized in that the organic solvent is chosen from the group constituted by the glycolic solvents such as the glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, polypropylene glycol, nitropropane, the alcohols, the ketones, propylene glycol methyl ether, 2,2,4-trimethyl-

1,3-pentanediol isobutyrate (texanol), white spirit, as well as their mixtures.

11. Composition according to any one of the preceding claims, characterized in that it additionally comprises 0.1 to 7% by weight of molybdenum oxide, with respect to the total weight of the composition.

12. Composition according to any one of the preceding claims, characterized in that it additionally comprises 0.5 to 10% by weight, with respect to the total weight of the composition, of a reinforcing agent of the anticorrosion properties chosen from the group constituted by yttrium, zirconium, lanthanum, cerium, praseodymium, in the form of oxides or of salts, advantageously yttrium oxide Y_2O_3, or 0.2 to 4% by weight, with respect to the total weight of the composition, of a corrosion inhibitor pigment such as aluminium triphosphate.

13. Composition according to any one of the preceding claims, characterized in that it additionally comprises a thickening agent, advantageously 0.005 to 7% by weight with respect to the total weight of the composition, and/or a wetting agent, advantageously 0.1 to 4% by weight with respect to the total weight of the composition.

14. Anticorrosion coating of metallic parts, characterized in that it is obtained from a coating composition according to one of claims 1 to 13, by spraying, soaking-draining or soaking-centrifugation, the coating layer then being subjected to a baking operation by supply of thermal energy, such as by convection, infrared or induction, preferably carried out at a temperature of between 180°C and 350°C, for approximately 10 to 60 minutes by convection or infra-red, or for 30 seconds to 5 minutes by induction.

15. Anticorrosion coating of metallic parts according to Claim 14, characterized in that, prior to a baking

operation, the coated metallic parts are subjected to a drying operation by supply of thermal energy, such as by convection, infrared or induction, especially at a temperature of between 30 and 250°C by convection or approximately 10 to 30 minutes on line or by induction for 30 seconds to 5 minutes.

16. Anticorrosion coating of metallic parts according to one of Claims 14 or 15, characterized in that it is applied to the metallic parts to be protected, with a thickness of the dry film of between 3 μm (11 g/m^2) and 30 μm (110 g/m^2) and preferably between 4 μm (15 g/m^2) and 12 μm (45 g/m^2), more particularly between 5 μm (18 g/m^2) and 10 μm (40 g/m^2).

17. Metallic substrate, preferably of steel or of zinc-coated steel or of a base layer of zinc deposited by different methods of application including mechanical deposition, of cast-iron or of aluminium, provided with an anticorrosion coating according to one of Claims 14 to 16.

18. Aqueous composition of C_1-C_8 tetraalkyl titanate, intended for the preparation of a coating composition for a metallic substrate in aqueous dispersion, prepared from a water-soluble organic solvent, from a binder containing a silane carrying at least one hydrolysable function in hydroxyl function, from a titanate or zirconate compatible in organic phase and from water, in the following proportions (percentages by mass):

- water-soluble organic solvent : 0 to 20%
- silane-based binder : 20 to 50%
- C_1-C_8 tetraalkyl titanate and/or zirconate : 5 to 25%
- water : qsp 100%.

19. Composition according to Claim 18, characterized in that the water-soluble organic solvent is chosen from the group constituted by the glycolic solvents such as the

glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, propylene glycol methyl ether, the alcohols, the ketones, as well as their mixtures.

20. Composition according to either one of Claims 18 and 19, characterized in that the binder comprises a silane carrying at least one hydrolysable function in hydroxyl function chosen from a C_1-C_4 alkoxy radical.

21. Composition according to any one of Claims 18 to 20, characterized in that the silane additionally carries an epoxy function.

22. Composition according to Claim 21, characterized in that the silane is chosen from di- or trimethoxysilane with an epoxy function and di- or triethoxysilane with an epoxy function, as well as their mixtures, in particular gamma-glycidoxy-propyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane.

23. Composition according to any one of Claims 18 to 22, characterized in that the C_1-C_8 tetraalkyl titanate is advantageously chosen from the group comprising tetraethyl titanate, tetra-n-butyl titanate and octylene glycol titanate, and the C_1-C_8 tetraalkyl zirconate is advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.

24. Use of the composition according to any one of Claims 18 to 23, in pretreatment for adhesives or coatings, in posttreatment as a sealer based on metallic particles, in passivation treatment for substrates based on steel, zinc, aluminium or steel covered with a zinc-based coating, or in an additive for improving the adhesion of coatings or adhesives in aqueous phase.